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# FOSS4G 2006 - Free And Open Source Software

Contribution ID : 106

## TerraCost: Scalable Computation of Least-Cost-Path Surfaces

Thursday 14 Sep 2006 at 12:00 (00h30')

TerraCost addresses the problem of computing multiple-source weighted least-cost-path surfaces for grid terrains. Currently, this functionality is provided by the GRASS module `r.cost`. Our approach, implemented in GRASS as `r.terracost`, expands this functionality such as to allow massive terrains to be processed efficiently. We obtain this efficiency by combine memory- and disk-based techniques, and, as a by-product of the algorithm's modular design, we can actually benefit from cluster-connected computing resources (if available). Experiments show that TerraCost's algorithms perform well in practice: Our implementation outperforms standard solutions as dataset size increases relative to available memory and our distributed solver obtains near-linear speedup when preprocessing large terrains for iterated computations with varying parameters.

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